NIEHS Initiatives

Developmental Centers

Americans want to live long and healthy lives, and the majority of them achieve that goal. In general, however, members of economically disadvantaged and/or underserved populations are less likely to do so. At every stage of life, these populations suffer disproportionate levels of morbidity and mortality. Additionally, they are often the populations with high degrees of exposure to environmental agents and are frequently the populations with the least information available about the health consequences of exposure to these agents.

The Developmental Centers Program is one aspect of a comprehensive initiative of the NIEHS in Environmental Equity. This program is the first step in establishing core centers that foster multidisciplinary research programs. They must use state-of-the-art science and address as a primary focus environmentally related health problems of economically disadvantaged and/or underserved populations. Projects funded under this initiative are to carry out the developmental steps preceding a center application focused on environmental equity. It is anticipated that successful applicants will have strong research capabilities and meaningful collaborative interactions with organizations/institutions representing the affected communities.

This is a new initiative of the NIEHS. Currently, three projects are funded under this new initiative. This program has attracted outstanding scientists to use their talents and cutting-edge technologies to address the likely causal association between the disproportionate exposure to environmental agents and excess morbidity and mortality among the poor and ethnic minorities.

Global Climate Change

Global climate change will affect many systems such as weather, water resources, transportation, and ecologic and human health. Effects of climate change on ecologic and human health will be mediated by such factors as climate change-associated air pollution, ozone depletion, acid rain, and toxic waste disposal as well as the impact of increased human population on the environment. National and international groups are raising many serious questions about how best to respond to these multiple health threats. Climate change-related efforts of the NIEHS have focused primarily on specific issues like UV-induced phototoxicity of drugs and chemicals, toxicity of chlorofluorocarbons (CFCs) and related chemicals, and general investigations of the health effects from air pollution or hazardous wastes. Targets for increased NIEHS efforts in climate change are 1) participating in WHO/United Nations Environment Program/Intergovernmental Panel on Climate Change committees exploring climate change. This could lead to individual and collaborative research with various governments and agencies concerning climate change impacts on human health; 2) contributing to WHO and the IPCC work groups preparing summaries and proposals for new biomedical research on climate change; and 3) promoting research needs identified from previous conferences and committee works to:

- Assess the adverse human health effects of "cures" of climate change such as CFC replacements, alternative fuels, solar panel constituents, and metals in new batteries.
- Study the mechanisms and possible interventions for adverse effects of increased UV irradiation on immune systems and activation of chemicals and drugs in the skin (phototoxicity).
- Study the toxicology of increasing atmospheric concentrations of pollutant mixtures, especially those involving small particles. Identify the most susceptible populations for these effects.
- Assess human health impacts of climate change effects on biodiversity, including the effect of species losses or increases. This health assessment would include the toxicology of new treatments and drugs needed for new or relocated pests, diseases, or ecology.

Over the years, conferences and international panel discussions on climate change have identified some possible human health dangers from several sources (e.g., use of exotic and heavy metals in energy transducers, increased output of toxic wastes, and development of new air pollutants). Yet there are indications of many other climate change-associated health problems (e.g., serious toxicity resulting from some replacements for CFCs and an increase in asthma and skin cancer incidence worldwide). Increased air pollution and UV irradiation associated with climate change are especially likely to set up conditions favoring increases in asthma and skin cancer. Several NIEHS studies on photosensitization suggest it will be an increasingly serious health problem with many chemicals as climate change worsens and UV exposure increases.

Climate change is controversial. If it occurs, many complex and interactive systems will be affected. Human health effects of climate change and its "cures" could be numerous, and interventions or preventions could be needed quickly. The present efforts are designed to continue ongoing research to develop new prevention/intervention strategies to minimize possibly serious climate-change effects.